033 - Art of Engineering - Cristina Mendonça

Cristina Mendonça is the Engineering Manager at Tekna in Quebec, Canada, and in this episode she tells Denise about her vast life experiences that brought her to where she is today. Including learning four languages, moving to Canada to take on a new challenge, and even being a seamstress for Cirque du Soleil. Learn who her influences have been and how she has risen to her current position in this fascinating episode of The Art of Engineering.

Denise: Welcome to the Art of Engineering. This morning I have the pleasure of introducing Cristina Mendonça, who is the Engineering Manager at Tekna in Quebec, Canada. Cristina visited our facility here in Springfield as we were designing and fabricating equipment for their advanced material processing. She has a fascinating story about her family's journey from Brazil to Canada, and frankly, I think a fearless approach to life.

But welcome, Cristina, because I'd like for you to tell us about yourself and about Tekna.

Cristina: I'm a Brazilian working in Canada after not long ago and, actually I just found Tekna two years after I got here and it's been six years I've been there and, Tekna is actually, a startup that was founded in 1990 by professors in the University of Sherbrooke.

So it's kind of all high tech, all technology involved. It's a really, really nice company to work for. I'm really proud to be here. And it was, initially it was focused on producing inductor couple plasma, and then we started selling systems. And, after a few years, like 10 years later, we started producing powders with the systems that we produced.

So, It is a high quality powder, it's incredibly clean, and it serves all the major companies and major markets in the industry for additive manufacturing. And this is a really nice environment, we have a lot of high skilled staff, so it really helps learning up and catching up with the metal industry.

Since I have been, always working in the plastics industry. So I graduated in the plastic engineering and I've been working with plastics since, since I graduated. So this is quite a change for me and I'm really proud of what I achieved over there.

Denise: Well, it's just so interesting because as Custom Powder Systems we build equipment for processing and it's We've done business with the food industry and the pharmaceutical industry and the chemical industry, but yours was one of the, our first forays into the powdered metals.

And it's fascinating to me that this equipment, this blending equipment and storage and containment and way to dispense and all of this transfers almost seamlessly across so many different industries. And Tekna, as one of our customers, is using what we call, intermediate bulk containers. So tell me how you use those.

Cristina: Yeah, exactly. Actually, before what we had was several small containers. So, of course, in efficiency and productivity is not as well conceived as the bulk containers. So those intermediate bulk containers, they allowed us, they allow us to How can I say moves mostly from one equipment to another, with a very, very low, mostly null, nil, contain, how can I say, contamination.

And, this is, this is quite a difference. This is quite a change that we had from the small containers to the big ones. So it is, it's really smoother in the production, level.

Denise: So less handling then.

Cristina: Exactly. Definitely less handling. So it's it's a huge step in safety issues also.

Denise: Well, back to you, Cristina, because you've made quite a journey from Brazil to Canada.

Tell me about your childhood and your upbringing and And then your choice to go into engineering.

Cristina: Well, how can I say, I'm the youngest daughter in a family of four kids. So my parents moved a lot when we were kids, within inside of, of the country, so my father could move up in his career. And, my mom is an artist and a teacher.

And in her 60s, she became a lawyer.

Denise: Wow.

Cristina: Tell me about resilience, right? So when I was, in the university, she was studying with me. We were living together just for this. So this is a kind of amazing and it gives a great example. I guess there's nothing better than leading, for example. And, this is, my, my parents, actually.

So as she dedicated her life to supporting my father, raising the kids and working 40 hours a week so my father could follow his dreams, this made us a really tight knit family. And we learned early on the value of education, teamwork, and passion in everything we do. We never do something halfway, we have to do it all the way.

So it does make a difference having parents who are natural leaders and kind to their core. taught us the importance of integrity, justice, family. We had many tasks. We studied hard. Failure was never an option. And, I can say we had plenty of space to create and play as we were always outside. There's no such thing as electronics like today.

And, the university was the minim accepted level. , that they gave us for truth. So I can say this, that what led us to education where we aren't right now, me and my, my, my brother and sisters is really my parents. They're really inspiring people.

Denise: That, that was the word that was coming to mind. They're inspirational.

Cristina: Yeah, definitely.

Denise: Wow. So, so what, as you were growing up, led you to engineering?

Cristina: Why engineering? Actually, my mother still played a significant role in my decision to pursue engineering. Initially, I wanted to study mechanical design. So, she just saw something in the news and she introduced me to a new plastics engineering course that was, focused on plastics transformation industry.

And, so the new field driven by the nearby petrochemical pool, it seemed promising professionally. And, I was an easygoing, so I was 17 and I said, let's do it. Let's, let's see what, what gets me. And then I moved to the big city and it was both exciting and daunting because first time out of, out of my house.

Yeah, I can say I'm kind of the black sheep of the family because everything, everyone else is either in a lawyer or works in health care. So I'm the only one that went to engineering.

Denise: So tell me about your, the first foray because you mentioned plastics. So what, what kind of plastics?

Cristina: it was, mostly the polyolefins. So I worked with, with, commodities. Quite different than what we do today at Tekna. It's a really custom, customized products and high technology. And even if it was high technology for all the, the, the equipment that we used before by my previous companies where I worked for, it was always commodities.

So, efficiency and, downtime and everything else is really, really a major step. And, it was transformation of plastics, like extrusion for film for the food industry. And later on, I worked at a company that made no ovens for health care, for, , how can I say, medical, department. So it was really, Define challenging also,

Denise: And then you found Tekna, which went from plastics and film to powdered metals.

Cristina: Exactly. So let's say I had a kind of, a decision making process in between. There was, should I say in Brazil where we are, I was already an engineering manager. In Brazil. So, I just, me and my husband, he's also an engineer, so it's easy. And, we just said, we have kids. Do we still, are we really going to bet in the country to stay here and to see what happens with safety and everything else?

And then it was too easy. We were too comfortable. And we said, why not? Can we move to Canada? And if it is Canada, can it be a language that we do not know, like French speaking province? So that's what we did. We decided to come here and we said the first one to get a job, we'll get a job. And the second one.

We'll, we'll move with, and then, when we got here, I started as a seamstress. So I was, I, I was, sewing for a high, how can I say, La Haute Couture.

Denise: Is that the little chap workshop?

Cristine: No, actually that is like, how can I say the big, okay. Let's say, we're having a really high end dress.

Denise: Yes.

Cristine: Someone has to make it. So this is what I did when I got here in Canada. So it was quite a restart.

Denise: Well, I did see that. So a seamstress, but a seamstress extraordinaire, I would say.

Cristine: Yeah, yeah, it is, it was quite different, let's say. And I was, I also had the opportunity to, to sue for the Cirque du Soleil.

So, yeah, this was amazing and you cannot understand how organized and, how can I say well structured they are. They have procedures for everything. You cannot just do this the way you want it. It is really, really, high standard, equipment.

Denise: So extremely complicated costuming. It's so interesting that there is such a, it's so almost the same as what we do in our own jobs of following standard procedures and work instructions and, and,

Cristina: and product development.

Denise: Wow. That's fascinating.

Cristina: Yeah, it is a real production line and it's a really, really advanced stuff that we don't see in every company. I was amazed.

Denise: Yes. Yes. And then, and then, and then you found Tekna.

Cristina: And then my husband found a job in Sherbrooke, which is where Tekna's headquarters is. And, we said, okay, let's move.

And then for me, let's start again, just one more time. Okay. I'm always ready to go, h? So, when we got here, he got a job in, a plastic company. I was quite jealous, I should say. Oh! Yeah, now he's, operations director, so I can say it was a good move. And, when we got here I just started seeing, where now I'm gonna choose where I wanna work.

And, I saw this, this, offer for Tekna and It was actually not exactly what I was looking for as, the offer stands, but the company really made me, enlighten my eyes. So I said, why not? I can restart again. And then, I sent my CV for the R& D technician.

Denise: So then tell us, because you've been at Tekna for six years, but you've progressed, and you've been in different positions. So what, so tell us about that journey.

Cristina: Oh yeah, that was an amazing journey. And I can say that I had , I, I had, how can I say this, wonderful person that I found when I got here at Tekna. It was my first interview for the job offer and, she was actually the first female, engineering person that I found women and, there was really, really good at what she did and gave me an amazing. , how can I say perspective of what I could be because I have already I had already worked with some females in the engineering field before, and I can I cannot say that was really my best experience. So when I got here and I found, Natalie Kristen, she was the, the R & D manager at the time.

And, she really bet on me. She, she believed in my potential and, as she grew in the company, I could say that I consider her my mentor because as she grew. I also had the opportunity to grow in the company and, I passed through from, R & D to, product development and, , how can I say, project, project manager, and then to where I am right now, which is, engineering manager.

So this is, there was, I would say the most amazing experience that I had in, in one company. In just six years. I'm really proud of it.

Denise: It's, it's so important to find those people, isn't it?

Cristina: Yeah, it is really important. And now we have, Tekna has actually a manufacturing management team in Canada. Which is led by three women. So we are two engineering manager and one supervisor. It is a really, really good team. And, at least we know we can move to task, right?

Denise: Yes, yes, yes. And I'm sure you're bringing along others. So you also speak. Four languages?

Cristina: Yeah, I also speak four languages.

Denise: That's amazing.

Cristina: Yeah, but I, I can say, well, I, I love learning new languages. I guess, all the vocabulary that we get and everything else is like, From, from, from something else, you cannot get there just learning one language. So, I had also a good, how can I say, a good path through my life as growing up in Brazil, a Portuguese speaking country, and living close to the border made it easy to pick up Spanish.

So most of South American countries. Speak Spanish so it's easier. And , as I've always lo loved learning new things and different language, fascinate me English was a must. So as a kid I enjoyed trying to understand song lyrics and movies in the original versions and everything. And when I started working, being fluent in English became a significant of advantage.

So we allowed me to excel in professional training, project startups. I had the opportunity to, to work abroad. It was spectacular having something that was my own and, I could, enjoy it, after all. And, my husband and I, we have even tried to learn, Mandarin. Yeah, but we get, we gave up a year later.

Maybe we'll try again someday.

Denise: Well, I think learning French would be difficult.

Cristina: I thought so, too. At the beginning, it was really, really hard to learn, I would say. But, this is a language that is based on Latin, as it is Portuguese and Spanish. So we did have the base.

Denise: Some similarities.

Cristina: Yes.

Denise: Interesting.

Cristina: It is really interesting. The, the, the written and the, the pronunciation is not the same, but after you get the, the beat, it's, easier to learn.

Denise: Back to powdered metals. Who are, besides additive manufacturing, what other industries, , use powdered metals like Tekna makes?

Cristina: We have, but actually there is the, the, the high pressure, there is, the, the powder spray.
There is a lot of other, industries that use the powder that Tekna makes, but actually this is, we do have most of our customers in the additive manufacturing.

Denise: And they're making all kinds of things, right?

Cristina: Yes, it's from aerospace, medical and everything. You can see this in, even in bicycles nowadays, so it's,

Denise: Tell me about some of the evolution of the metals themselves and how, how they've become almost exotic and And have made additive manufacturing more or the capabilities for added manufacturing over the years.

Cristina: Yeah, I would say this is mostly the three 3D printing that brings this all this, . Novelties, because it allows us to make parts out of metal that before they were used, usinated and, and so on. So, the loss that we had in the process were bigger. The stress in the metal was, definitely higher.

And, with the 3D printing and the right kind of products, let's say the right kind of powder, which is, pure enough, you have no contaminations and, and things like this, it allow us to make much more intricate, intricate parts and complex parts and with a much less weight than we had before. So of course that opens, a world of opportunities.

Denise: So it's the, really the strength and the purity and it's, it's all of those things combined.

Cristina: Exactly. It is a combination.

Denise: It's just fascinating to me.

Cristina: Yeah, as we see the parts that are made with our powders and knowing that some of them go inside our body, I think it is really, really, we are just another step away from what it used to be.

Denise: I happen to have open heart surgery in May. I may have a little part in me that.

Cristina: I hope you chose Titanium from Tekna, right?

Denise: Well, I, well, I'll just check and see. Oh, so are there associations and organizations in the powdered metal field that Maybe have contributed to, to Tekna's success, your success. I know it's not a new field, but it feels

like a newer field.

Cristina: Yes, it is. It is kind of a newer field. But we can say Tekna has been up since 1990. So it's quite a long time. Yes. Yeah, but anyways, we do know that everything in, our airspace and everything in medical, it does take a long time to, to qualify and to make sure that we follow

all the right steps because we don't get a second chance, right? Right. It's down. Sorry, but it's down. You don't, you don't have a second chance.

So this is, I guess, all the, the safety standards and everything else, they are really here to stay and they advance and they, upgrade as, as long as, as we continue working on it. And, At least I can say for me that I've learned a lot from our customers, our suppliers, and standard associations.

So, especially regarding safety standards and everything else, this interaction has significantly contributed to the understanding and success in the powder metal industry.

Denise: Yes, you're right. I don't want to have to open me up and do that again. Exactly. I want it to be right.

Cristina: There you go.

Denise: Well, Cristina, this has been more interesting than I even thought it might be.

Cristina: Wow, I'm glad. But some questions about you in particular. Three questions. What brings you

joy? Hmm, I would say either a house full with family or friends or a day in the farm with hot coffee, cold weather, and calm. I love enjoying the view or reading a book or something like this.

Okay. So either one would make me happy.

Denise: And, and what is your morning ritual?

Cristina: Mmm, I wake up quite early, let's say at six. I start with a nice shower. Then I drink a stand up coffee, which my husband has made for me. So I wake up already with a smell of coffee. Awesome. Yeah. While preparing the box lunch for my daughter, we chat around and she leaves to school.

Then it's a goodbye kiss to my husband and son and I'm off to work.

Denise: And is there anyone you'd like to be stuck on an elevator with?

Cristina: My parents. They're still there, but they're quite far away. So I don't have the chance to see them as much as I'd like to. And, I would really like to seize the moment with just the two of them to, to speak of everything and anything.

Just to be together.

Denise: Oh, that would be awesome. Well, Cristina, thank you so much. And by the way, there are two people in this building that wanted, I wanted me to be sure to tell you hello, and that's Austin and Doug.

Cristina: Yeah, you say hello to them too. I really, really enjoy working with them. I really miss, our talks and everything.

Well, we'll hope we can continue that in the future, but thank you very much for joining me today, Cristina. It's been delightful.

Thank you for inviting me. It was a pleasure.

Thank you for joining us again on the Art of Engineering. I'd love it if you would share this episode with others in our industry and encourage them to subscribe wherever they get podcasts. In the meantime, we'd appreciate your five star review and would love to hear any comments or suggestions. Until next time, I'm Denise McIntosh from Custom Powder Systems online at custom-powder.com.

Quotes from Cristina Mendonça:

“We learned early on the value of education, teamwork, and passion in everything we do. We never do something halfway, we have to do it all the way.”

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